

| | CPC1909J | Units |
|------------------|----------|------------------|
| Blocking Voltage | 60 | V _P |
| Load Current | 10 | A _{rms} |
| On-resistance | 0.1 | Ω |
| R _{θJC} | 0.30 | °C/W |

Features

- Compact ISOPLUS-264 Power Package
- Low Thermal Resistance
- Heat Sink Option
- Handle Load Currents Up to 10A_{rms} (free air)
- High Reliability
- No Moving Parts
- Low Drive Power Requirements (TTL/CMOS Compatible)
- Arc-Free With No Snubbing Circuits
- 2500V_{rms} Input/Output Isolation
- No EMI/RFI Generation
- Machine Insertable, Wave Solderable

Applications

- Industrial Controls
- Motor Control
- Robotics
- Medical Equipment—Patient/Equipment Isolation
- Instrumentation
 - Multiplexers
 - Data Acquisition
 - Electronic Switching
 - I/O Subsystems
 - Meters (Watt-Hour, Water, Gas)
- Transportation Equipment
- Aerospace/Defense

Description

Clare and IXYS have combined to bring OptoMOS® technology, reliability and compact size to a new family of high power solid state relays. As part of that family, the CPC1909J is a 1-Form-A solid state relay. The CPC1909J employs optically coupled MOSFET technology to provide 2500V_{rms} of input to output isolation. The efficient MOSFET switches and photovoltaic die use Clare's patented OptoMOS architecture while the input is controlled by a highly efficient GaAlAs infrared LED. The combination of low on resistance and high load current handling capabilities makes the relay suitable for a variety of high performance switching applications.

The unique ISOPLUS-264 package pioneered by IXYS allows solid state relays to achieve the highest current and power ratings. This package features an IXYS unique process where the silicon chips are soft soldered onto the Direct Copper bond (DCB) substrate instead of the usual copper leadframe. The DCB ceramic, the same substrate used in high power modules, not only provides 2500V_{rms} isolation, but also very low thermal resistance.

Approvals

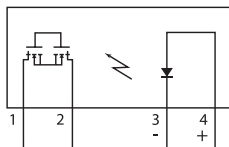
- UL recognized component: File # E69938
- Certified to: UL 508

Ordering Information

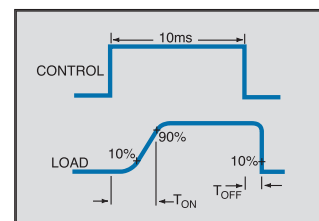
| Part # | Description |
|----------|---------------------------|
| CPC1909J | ISOPLUS-264 (25 per tube) |

Pin Configuration

CPC1909J Pinout



Switching Characteristics of Normally Open (Form A) Devices



Absolute Maximum Ratings (@ 25°C)

| Parameter | Ratings | Units |
|-----------------------------------|-------------|------------------|
| Blocking Voltage | 60 | V _P |
| Reverse Input Voltage | 5 | V |
| Input Control Current | 100 | mA |
| Peak (10ms) | 1 | A |
| Input Power Dissipation | 150 | mW |
| Isolation voltage Input to Output | 2500 | V _{rms} |
| Operational Temperature | -40 to +85 | °C |
| Storage Temperature | -40 to +125 | °C |

Absolute Maximum Ratings are stress ratings. Stresses in excess of these ratings can cause permanent damage to the device. Functional operation of the device at conditions beyond those indicated in the operational sections of this data sheet is not implied.

Electrical Characteristics

| Parameter | Conditions | Symbol | Min | Typ | Max | Units |
|--------------------------------------|---|-------------------|-----|------|-----|------------------|
| Output Characteristics @ 25°C | | | | | | |
| Load Current, Continuous | Free air | I _L | - | - | 10 | A _{rms} |
| Peak Load Current | T ≤ 10ms | I _L | - | - | 20 | A _{rms} |
| On-Resistance ¹ | I _F =10mA, I _L =1A | R _{ON} | - | 0.05 | 0.1 | Ω |
| Off-State Leakage Current | V _L =60V | I _{LEAK} | - | - | 1 | μA |
| Switching Speeds | I _F =20mA, V _L =10V | T _{ON} | - | - | 25 | ms |
| Turn-On | I _F =20mA, V _L =10V | T _{OFF} | - | - | 10 | ms |
| Turn-Off | I _F =20mA, V _L =10V | T _{OFF} | - | - | 10 | ms |
| Input Characteristics @ 25°C | | | | | | |
| Input Control Current ² | I _L =1A | I _F | 10 | - | - | mA |
| Input Dropout Current | - | I _F | 0.6 | - | - | mA |
| Input Voltage Drop | I _F =5mA | V _F | 0.9 | 1.2 | 1.4 | V |
| Reverse Input Current | V _R =5V | I _R | - | - | 10 | μA |
| Common Characteristics @ 25°C | | | | | | |
| Capacitance Input to Output | - | C _{I/O} | - | 1 | - | pF |

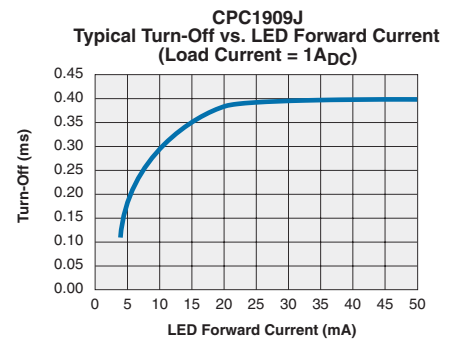
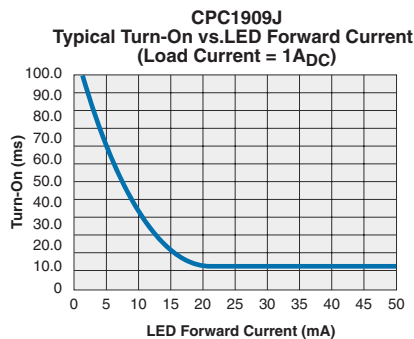
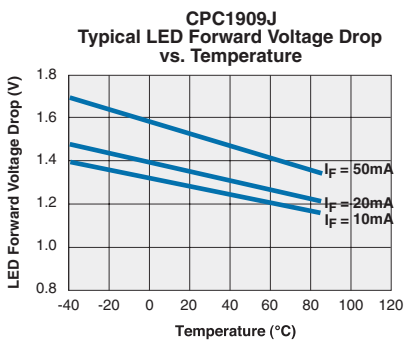
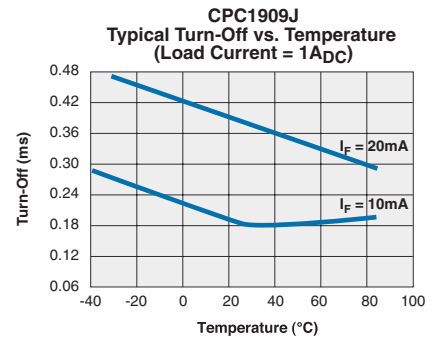
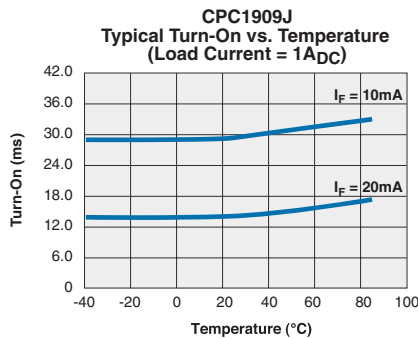
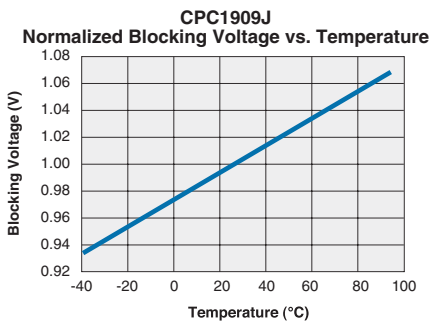
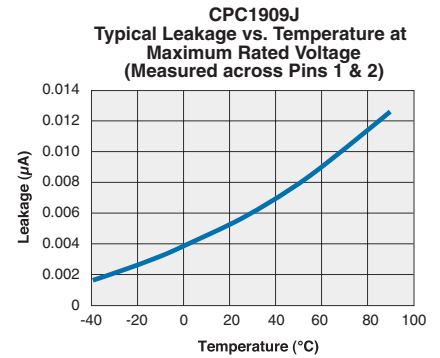
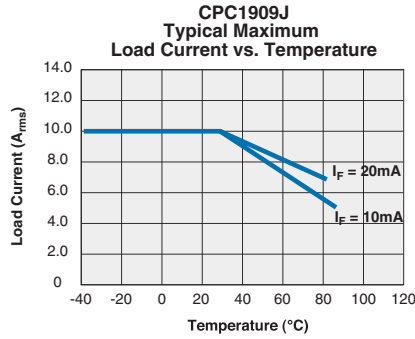
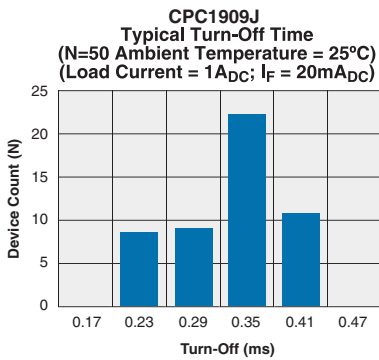
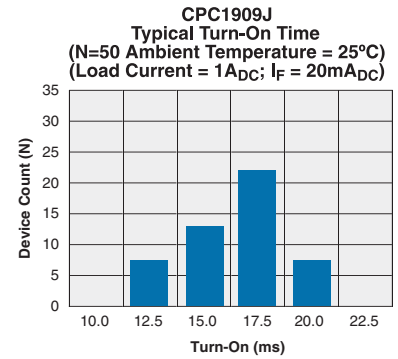
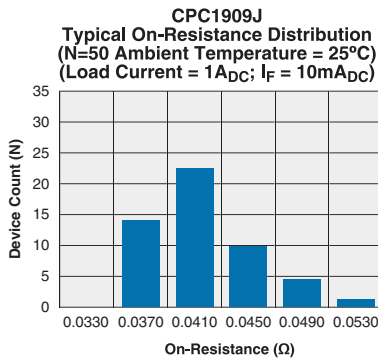
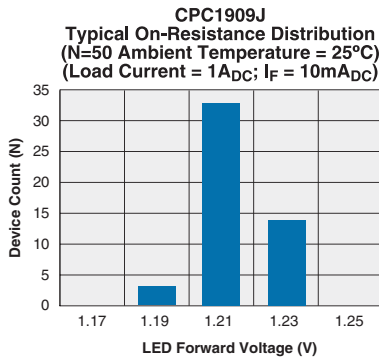
¹ Measurement taken within 1 second of on time.

² For applications requiring high temperature operation (greater than 60°C) an LED drive current of 20mA is recommended.

Thermal Characteristics

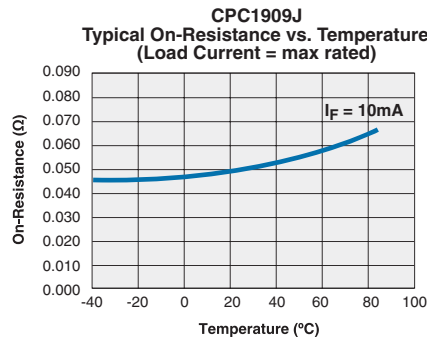
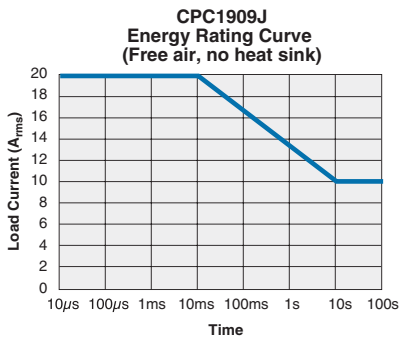
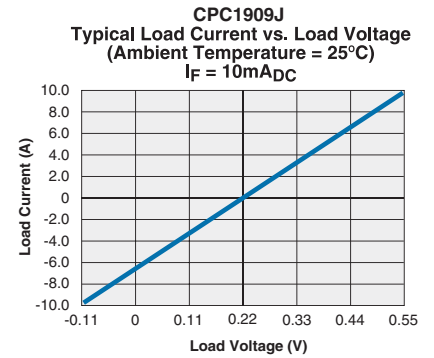
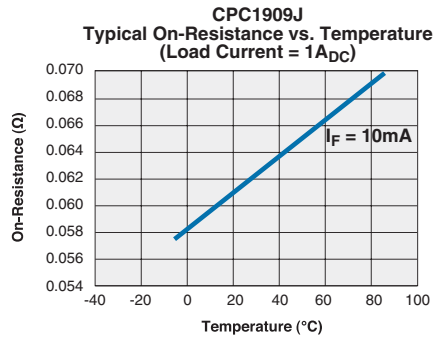
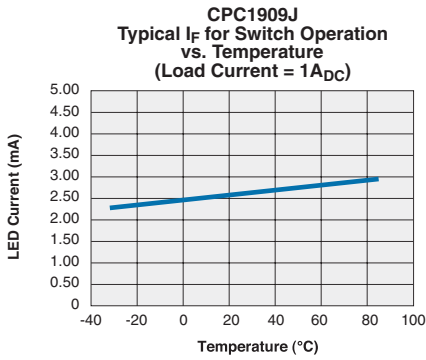
| Parameter | Conditions | Symbol | Min | Typ | Max | Units |
|---------------------------------------|------------|------------------|-----|-----|-----|-------|
| Thermal Resistance (junction to case) | - | R _{θJC} | - | 0.3 | - | °C/W |

PERFORMANCE DATA*



*The Performance data shown in the graphs above is typical of device performance. For guaranteed parameters not indicated in the written specifications, please contact our application department.

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Manufacturing Information

Soldering

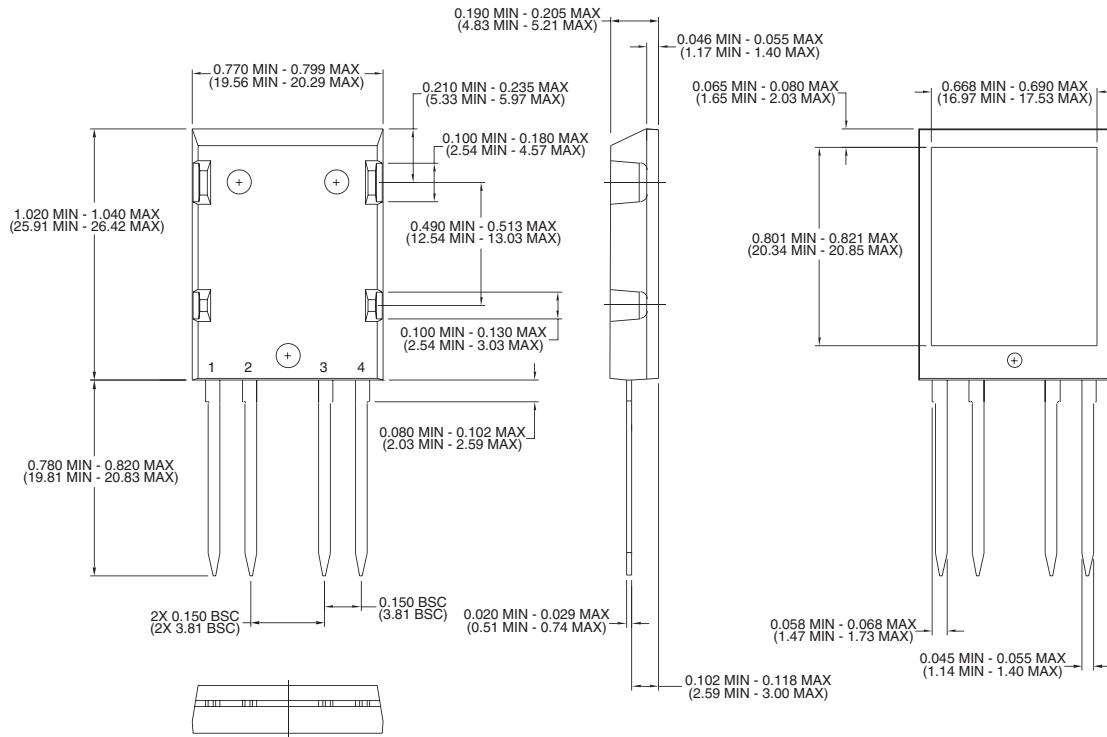
Recommended soldering processes are limited to 245°C component body temperature for 10 seconds.

Washing

Clare does not recommend ultrasonic cleaning or the use of chlorinated solvents.

MECHANICAL DIMENSIONS:

4 Pin ISOPLUS-264



NOTE: Bottom heatsink meets 2500V_{rms} isolation to the other pins.

Dimensions:
inches
(mm)

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